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*Disturbance of October 18-21.*—The first indications of a definite circulation in connection with this slight tropical disturbance were noted about 100 miles off the west Florida coast on the night of October 18-19. It had developed from a wave of low pressure and squally weather that had moved across the southern Bahamas and through the Florida Straits a few days previously, and for which small-craft warnings had been issued on the morning of October 17.

On the morning of October 19, a ship, 50 miles west of Tampa, reported a west-southwest wind of 45 miles per hour and a barometer reading of 1,002.4 millibars (29.60 inches). From this location the storm center then moved

north-northwestward and passed inland at Cedar Key, about noon of the 20th, where the lowest barometer reading was 1,005.8 millibars (29.70 inches).

Available observations show no winds over moderate gale force (40 to 50 miles per hour) during the progress of this storm. Torrential rains (10 to 15 inches) occurred at several points near the center as the disturbance stalled and dissipated over northern Florida.

A report from Ocala lists the death of a 6-weeks-old infant, hurled 100 feet from its basket, and injury to both parents when their house was demolished by high winds. This report indicates the formation of a small and short-lived tornado rather than any highly destructive winds resulting directly from the tropical disturbance. All other reported damage resulted from flooding due to the excessive rains.

## METEOROLOGICAL AND CLIMATOLOGICAL DATA FOR OCTOBER 1941

[Climate and Crop Weather Division, J. B. KINCEP in charge]

### AEROLOGICAL OBSERVATIONS

By HOMER D. DYCK

Departures from normal surface temperature for October followed nearly the same pattern as in the previous month, temperatures being above normal generally over the eastern half of the country with the exception of an area in the extreme Northeast, and below normal over the western half with the exception of the far Northwest and a narrow strip along the Pacific Coast. Plus departures ranged from 6° to 8° F. over much of the South, while minus departures were small.

At 1,500 meters above sea level the 5 a. m. resultant winds for October were from directions to north of normal over the Lake region and the extreme Northeast and over much of the Plateau region and the far Northwest, while they were from south of normal at this level over much of the rest of the country. At 3,000 meters the morning resultant winds for October were from directions south of normal over most of the country with the exception of three stations near the Pacific coast and one near the Lake region, which had resultant winds to north of normal. At 5,000 meters a good comparison of the 5 p. m. resultant winds with the corresponding 5 a. m. normals was not possible over the northern Great Plains and the Lake region. Elsewhere in the country the October afternoon resultants at this level were from directions to south of the corresponding morning normals generally, except over the Pacific Coast States and over a few stations in the East.

At both the 1,500- and 3,000-meter levels resultant velocities were below normal over the northern Plateau region, the central Mississippi Valley and an area in the southeastern States. At 5,000 meters the 5 p. m. resultant velocities were decidedly higher than corresponding morning normals everywhere except in the Northwest.

Corresponding to the similarity of the October surface temperature departure pattern to that of September, there is also a marked similarity in the departures from normal resultant wind directions for the two months. The same general characteristics are evident in both months, i. e., the turning to southward of normal generally over the eastern half of the country, and the opposite shift from normal over the western half. During October, however, the area in the west where turning to northward of normal took place, was not nearly as extensive as in September thus accounting perhaps for the smaller minus temperature anomalies over that area during October.

When the 5 p. m. resultant directions are compared to the corresponding 5 a. m. resultant directions, no well marked areas of similar wind shift are evident. It may be noted, however, that a shift to southward during the day occurred at considerably more stations than a shift to northward.

At 1,500 meters the 5 p. m. resultant velocities were smaller than the corresponding 5 a. m. velocities over the extreme northern States and over the Middle Atlantic States and the South, while the afternoon velocities were larger than the morning velocities elsewhere generally. At 3,000 meters the p. m. resultant velocities were higher than corresponding a. m. velocities everywhere except over a small area in the southern Plateau region and California where they were slightly below the morning velocities.

The upper-air data discussed above are based on 5 a. m. (E. S. T.) pilot balloon observations (charts VIII and IX) as well as on observations made at 5 p. m. (table 2 and charts X and XI).

Radiosonde and airplane stations located in the southern part of the country recorded on the average the highest mean monthly pressures at each of the several standard levels from 2,000 to 18,000 meters. The highest mean monthly pressure occurred over both Atlanta and Charleston at the 2,000- and 2,500-meter levels, over Atlanta at 3,000 and 4,000 meters, and over Atlanta, Brownsville, and Miami at 5,000 meters. At 6,000 meters Atlanta, Brownsville, Miami, and San Antonio recorded the highest mean monthly pressure while the highest occurred over Brownsville, Lake Charles, Miami, and San Antonio at 7,000 meters, over Brownsville and Miami at 8,000 meters, over Miami and San Antonio at 9,000 meters, and over Brownsville, Miami, and San Antonio at 10,000 meters. At 11,000 meters the highest mean monthly pressure occurred over Miami and San Antonio, while at 12,000 meters pressures averaged highest over Brownsville, Miami, and San Antonio. San Antonio recorded the highest mean monthly pressure from 13,000 to 18,000 meters inclusive. Atlanta also recorded the same maximum, however at 16,000 meters. The lowest mean monthly pressure occurred over both Portland, Maine, and Sault Ste. Marie from 2,000 to 6,000 meters inclusive, while at 7,000 and 8,000 meters the lowest occurred over Portland, Maine, Sault Ste. Marie, Seattle, and Spokane, and at 9,000 meters it occurred at Spokane and Seattle. Spokane recorded the lowest mean monthly pressure at

levels from 10,000 to 16,000 meters inclusive, with Seattle also recording the minimum at the 14,000, 15,000, and 16,000 meter levels. Portland, Maine, also recorded the minimum at 14,000 and 16,000 meters. Pressures averaged lowest over Spokane at 17,000 and 18,000 meters. Mean monthly pressures at Alaskan stations were lower than mean minimum pressures over the United States at corresponding levels from 2,000 to 16,000 meters, inclusive.

Mean surface pressures for October were higher than those for September over most of the United States. At standard levels above the surface, however, only the Northwest recorded higher pressures than last month and these only up to about 7,000 meters, while the rest of the country recorded substantial decreases from last month at all standard levels. These decreases amounted to as much as 9 mb. over Portland, Maine, from about 5,000 to 10,000 meters. All Alaskan stations reported substantial decreases in pressure at all levels. Pressure gradients this month were less steep than last month over the Northwest, but were steeper in general elsewhere over the country. The steepest upper level pressure gradient for October occurred between Sault Ste. Marie and Detroit at the 8,000 meter level where there was a change of 1mb. pressure for each 38 miles of horizontal distance between the two stations.

The mean temperatures for October were considerably lower than September's at most levels up to and including 13,000 meters. Above this level scattered exceptions occurred over the southern Plateau region and the Lake region.

Mean temperatures for October 1941 were considerably higher than those for October 1940 over most of the eastern half of the country up to and including 11,000 meters and somewhat below October 1940 over the western half up to about 7,000 meters. From 7,000 to 19,000 meters, temperatures over the western half were generally above last year's and from 13,000 to 19,000 meters temperatures over the eastern half of the United States were generally lower than last year's.

At 1,000 meters mean temperatures for October were above normal east of the Rocky Mountains with the exception of the central Great Plains and the extreme Northeast where they were slightly below normal. Elsewhere they were below normal at this level. At the 3,000- and 5,000-meter levels mean temperatures were below normal west of the Rocky Mountains and in the extreme Northeast and considerably above normal elsewhere.

The mean relative humidities for the month at the 1,000-, 3,000-, and 5,000-meter levels were considerably above normal over most stations. Marked plus departures occurred over San Antonio, Oklahoma City, and St. Louis at the 1,000- and 3,000-meter levels.

The altitude at which the mean monthly temperature of 0° C. for October occurred varied from the lowest (2,500 meters) over Seattle, Sault Ste. Marie, and Portland, Maine, to the highest (4,900 meters) over Brownsville, Tex. The level at which, on the average, freezing conditions occurred was lower this month than last over all of the United States with the exception of Pensacola, where it was slightly higher. This level was much lower than it was last month over the extreme Northeast, being 1,600 meters lower over Portland, Maine.

The lowest free-air temperature recorded during the month over the United States was -86.3° C. (-123.3° F.). This temperature occurred over Miami, Fla., on the morning of October 6, at an altitude of 16,300 meters (about 10.1 miles) above sea level. The lowest temperature for the month over San Juan was -82.0° C. (-115.6° F.) observed at 17,300 meters (about 10.8 miles) above sea level on October 12.

Table 3 shows the maximum free-air wind velocities for various sections of the United States during October as determined by pilot balloon observations. The highest observed wind velocity for the month was 77 m. p. s. (172 miles per hour) observed over Great Falls, Mont., on October 2. This wind was blowing from the north at an elevation of 10,220 meters (about 6.4 miles) above sea level.

The highest October wind velocity observed during the last 5 years in the free-air layer from the surface to 2,500 meters was 46.8 m. p. s. (105 miles per hour) observed blowing from the south on October 17, 1940, over Rapid City, S. Dak., at an altitude of 1,594 meters (about 1 mile). A velocity of 62.8 m. p. s. (140 miles per hour) is the highest observed in the last 5 years in the layer from 2,500 meters to 5,000 meters. This wind was observed on October 24, 1939, blowing from the northwest at an altitude of 4,240 meters (about 2.6 miles) over Hartford, Conn. During this same 5-year period a still higher wind velocity 78.0 m. p. s. (174 miles per hour) was observed in the layer above 5,000 meters. This wind was blowing from the southwest at an elevation of 7,960 meters (about 14.9 miles) over Denver, Colo., on October 17, 1938.

TABLE 1.—Mean free-air barometric pressure in millibars, temperature in degrees centigrade, and relative humidities in percent, obtained by airplanes and radiosondes during October 1941

Altitude (meters) m. s. l.	Stations with elevations in meters above sea level																											
	Albuquerque, N. Mex. (1,620 m.)				Atlanta, Ga. (300 m.)				Bismarck, N. Dak. (505 m.)				Boise, Idaho (864 m.)				Brownsville, Tex. (6 m.)				Buffalo, N. Y. (221 m.)				Charleston, S. C. (14 m.)			
	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity
Surface.....	30	838	13.2	57	31	986	19.0	73	31	957	6.0	77	31	917	9.3	69	31	1,014	24.7	91	31	992	10.3	78	31	1,019	19.3	90
500.....					31	963	19.8	63									31	958	23.4	87	31	960	10.3	76				
1,000.....					31	909	18.0	67	31	901	8.2	65	30	902	11.5	66	31	905	20.6	80	31	903	8.5	70	31	909	17.3	71
1,500.....					31	857	15.7	64	31	848	5.7	63	30	850	9.4	62	31	854	18.4	71	31	850	6.4	69	31	857	14.8	65
2,000.....	30	801	12.6	54	31	808	13.5	56	31	797	3.2	61	30	800	6.1	61	31	806	15.9	66	31	800	4.6	63	31	808	13.1	55
2,500.....	30	754	9.5	55	31	761	11.0	50	31	749	1.4	57	29	752	2.6	61	31	759	13.7	59	31	752	2.6	59	31	761	10.9	47
3,000.....	30	710	6.8	58	31	717	8.4	42	31	704	-1.2	55	29	707	-0.7	61	31	715	10.9	56	31	707	0.7	54	31	716	8.6	42
3,500.....	30	628	-1.1	60	31	635	3.9	34	31	620	-6.0	51	28	623	-7.1	61	31	634	5.0	55	30	623	-3.9	50	30	634	4.0	35
4,000.....	30	553	-6.8	49	31	561	-1.9	31	31	546	-12.4	50	28	547	-13.4	59	31	561	-0.7	53	30	549	-9.5	47	30	560	-1.7	31
4,500.....	30	486	-12.6	39	31	494	-7.8	28	31	478	-19.2	49	28	479	-20.3	55	30	494	-7.0	50	30	481	-15.7	45	29	493	-8.3	29
5,000.....	30	426	-19.3	36	31	433	-14.2	29	31	417	-26.5	48	28	418	-27.5	54	29	434	-13.9	46	30	421	-22.6	43	29	433	-15.3	29
5,500.....	29	372	-26.4	37	30	379	-20.8	29	31	362	-33.8	47	28	363	-34.7	53	29	380	-20.7	43	28	367	-29.5	43	29	379	-22.4	28
6,000.....	29	322	-33.6	37	30	330	-28.0	29	31	313	-41.0	27	31	314	-42.0	28	29	330	-28.1	41	26	318	-36.5	42	29	329	-29.8	28
6,500.....	29	280	-40.6		29	287	-35.5	28	31	270	-47.1	28	28	270	-48.5	29	28	288	-35.8	40	24	275	-43.0	29	286	-37.5	28	
7,000.....	29	241	-47.0		29	248	-43.2	29	29	232	-51.8	28	28	232	-52.5	26	28	248	-44.0	24	24	237	-48.8	29	246	-45.5		
7,500.....	27	206	-52.5		29	213	-50.8	29	29	199	-54.1	28	29	199	-55.2	25	24	214	-51.9	24	24	203	-54.0	29	211	-53.3		
8,000.....	26	177	-56.9		29	182	-57.8	29	29	170	-54.8	27	27	170	-56.9	25	25	183	-59.5	23	23	173	-57.7	29	180	-60.9		
8,500.....	26	151	-60.8		29	155	-63.9	29	29	145	-56.2	25	25	145	-57.9	24	24	155	-66.7	21	21	147	-60.1	29	153	-67.2		
9,000.....	24	128	-64.1		29	132	-68.7	29	28	124	-57.2	24	24	124	-59.3	24	24	131	-72.4	20	20	126	-61.9	29	129	-72.4		
9,500.....	23	109	-66.1		29	112	-71.6	26	26	106	-58.0	19	19	105	-59.9	20	20	110	-76.0	18	18	107	-62.8	27	109	-75.1		
10,000.....	20	92	-66.2		28	94	-72.3	18	18	90	-58.2	13	13	90	-59.7	16	16	93	-75.8	18	18	91	-62.0	25	92	-75.1		
10,500.....	19	78	-64.4		26	79	-70.1	11	11	77	-58.0	8	8	76	-59.7	11	11	78	-71.6	13	13	77	-61.2	21	77	-71.1		
11,000.....	10	66	-63.1		21	67	-66.7	5	5	66	-56.9					6	6	66	-68.6		8	66	-60.7		17	65	-66.5	
20,000.....					8	57	-62.6														6	55	-63.7		6	55	-63.7	

Altitude (meters) m. s. l.	Stations with elevations in meters above sea level																											
	Denver, Colo. (1,616 m.)				Detroit, Mich. (194 m.)				El Paso, Tex. (1,183 m.)				Ely, Nev. (1,908 m.)				Great Falls, Mont. (1,128 m.)				Huntington, W. Va. (172 m.)				Joliet, Ill. (178 m.)			
	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity
Surface.....	30	839	7.8	74	31	994	10.4	86	31	882	16.6	61	31	809	3.7	70	31	888	7.2	57	31	999	13.8	88	28	997	11.4	87
500.....					31	958	11.6	78									31	961	15.3	72	31	961	15.3	72	28	959	12.1	78
1,000.....					31	903	9.6	75									31	906	13.4	71	31	906	13.4	71	28	904	9.8	70
1,500.....					31	850	8.6	67	31	851	17.1	54					31	854	11.2	66	31	854	11.2	66	28	851	8.0	72
2,000.....	30	801	8.1	64	31	800	7.1	61	31	802	14.1	53	31	800	5.6	64	31	798	4.8	54	31	804	9.5	57	28	800	6.7	65
2,500.....	30	753	5.3	63	31	752	5.0	55	31	756	10.9	55	31	752	4.1	60	31	750	1.8	52	31	757	7.3	55	28	753	4.9	61
3,000.....	30	708	2.4	64	31	707	2.9	52	31	711	7.4	57	31	707	7.7	59	31	705	-1.0	51	31	712	4.8	52	27	708	2.9	57
3,500.....	30	625	-3.4	63	30	625	-1.9	49	29	630	1.2	66	31	624	-5.4	58	31	621	-6.6	51	31	629	-5.4	49	27	625	-2.1	53
4,000.....	29	550	-9.6	59	30	550	-8.0	46	29	556	-4.5	50	31	548	-11.8	56	31	546	-12.9	50	30	555	-6.0	44	27	551	-7.8	48
4,500.....	28	483	-16.3	56	28	483	-14.0	43	29	489	-10.8	41	31	480	-18.7	52	31	478	-19.5	47	30	487	-12.3	42	27	484	-14.3	46
5,000.....	27	422	-23.2	52	27	423	-20.8	42	28	428	-17.6	40	31	420	-25.5	50	31	417	-26.8	45	30	427	-19.0	41	27	423	-21.0	44
5,500.....	26	367	-30.2	49	27	369	-27.7	41	27	374	-24.5	38	31	364	-33.0	49	31	362	-34.3	45	30	373	-25.7	40	26	369	-27.7	42
6,000.....	24	318	-37.5	49	27	320	-35.0	39	27	325	-31.8	38	30	315	-40.2	49	31	313	-41.5	45	30	324	-32.9	41	24	320	-34.8	43
6,500.....	21	275	-44.6		25	277	-41.9	27	27	282	-39.1	37	30	272	-46.1	37	31	270	-47.6	37	30	280	-40.4		21	277	-41.8	
7,000.....	18	236	-50.4		25	238	-48.3	30	27	243	-46.4	30	30	234	-50.0	30	30	232	-52.2	30	30	242	-47.9		17	238	-48.3	
7,500.....	19	202	-54.1		23	205	-53.9	27	26	209	-53.2	27	30	200	-53.2	30	30	198	-54.9	29	29	207	-54.6		15	204	-54.7	
8,000.....	18	173	-56.8		22	175	-57.9	26	26	178	-59.4	26	29	171	-55.3	30	30	169	-56.2	29	29	177	-59.7		9	174	-60.4	
8,500.....	17	148	-59.2		22	149	-60.5	26	26	152	-64.6	26	29	146	-57.0	30	30	145	-57.0	29	29	151	-63.7		7	148	-64.3	
9,000.....	16	125	-61.2		20	127	-62.4	24	24	129	-67.9	24	28	125	-58.8	27	27	123	-57.4	26	26	128	-66.8		6	126	-65.2	
9,500.....	14	107	-62.3		18	108	-63.4	21	18	109	-69.1	26	25	106	-60.4	26	26	105	-58.1	19	19	108	-68.0					
10,000.....	11	91	-62.4		17	92	-63.0	13	13	92	-68.4	18	15	91	-61.1	21	21	90	-58.0	14	14	92	-67.4					
10,500.....	6	77	-62.2		7	78	-60.9	6	6	66	-63.8	6				10	76	-57.1	8	8	77	-65.1						

Altitude (members) m. s. l.	Stations with elevations in meters above sea level																											
	Lake Charles, La. (5 m.)				Lakehurst, N. J. <sup>1</sup> (39 m.)				Medford, Oreg. (401 m.)				Miami, Fla. (4 m.)				Nashville, Tenn. (180 m.)				Norfolk, Va. <sup>1 2</sup> (10 m.)				Oakland, Calif. (2 m.)			
	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity
Surface	30	1,016	21.6	92	32	1,014	12.0	83	31	970	11.2	73	31	1,017	24.4	87	31	998	18.4	73	22	1,022	18.2	81	31	1,015	14.6	76
500	30	960	21.5	83	32	960	12.4	84	31	958	12.2	70	31	961	22.5	89	31	962	19.1	69	22	964	18.3	69	31	957	15.4	58
1,000	30	906	19.3	73	32	905	10.2	73	31	903	11.4	66	31	907	19.2	83	31	907	16.6	69	22	909	16.0	69	31	902	13.7	61
1,500	30	855	17.0	74	32	852	8.8	69	31	850	8.5	69	31	856	16.5	79	31	855	14.6	68	22	857	13.5	61	31	850	11.0	49
2,000	30	806	14.5	69	32	802	7.2	61	31	800	5.7	69	31	807	13.8	76	31	806	12.4	62	22	807	11.5	61	31	800	9.4	46
2,500	30	760	12.2	65	32	754	5.5	56	31	752	3.1	64	31	760	11.9	64	31	759	9.9	59	22	760	9.7	52	31	753	6.1	40
3,000	30	716	10.1	56	32	709	3.4	56	31	707	0.4	59	31	716	9.5	56	31	715	7.4	59	21	715	7.1	45	31	708	3.4	33
4,000	30	634	4.5	51	31	628	-1.7	56	31	624	-4.7	46	31	634	4.5	45	30	632	2.1	54	21	632	1.8	38	31	625	-2.4	33
5,000	30	560	-1.3	48	31	552	-7.4	53	31	549	-10.8	44	30	561	-0.6	38	29	558	-3.2	46	18	558	-5.8	33	31	551	-8.7	30
6,000	29	493	-7.1	42	30	484	-13.6	57	31	481	-17.5	43	30	494	-6.5	33	29	491	-9.5	44					29	483	-15.8	28
7,000	29	434	-13.7	42	30	424	-20.2	61	31	420	-24.8	43	30	434	-13.1	31	28	431	-16.3	42					29	422	-22.8	28
8,000	29	379	-20.7	40	29	370	-27.0	62	31	365	-32.1	42	30	380	-20.2	30	28	376	-23.2	39					29	367	-29.6	31
9,000	29	330	-28.0	39	27	321	-34.1	60	31	316	-39.3	39	30	331	-27.7	30	26	327	-30.4	36					29	318	-36.3	30
10,000	29	287	-35.4	38	26	278	-41.1	61	31	273	-45.9	29	29	288	-35.2	29	24	284	-37.8	33					29			

See footnotes at end of table.

TABLE 1.—Mean free-air barometric pressure in millibars, temperature in degrees centigrade, and relative humidities in percent, obtained by airplanes and radiosondes during October 1941—Continued

Altitude (meters) m. s. l.	Stations with elevations in meters above sea level																			
	San Antonio, Tex.) (174 m.)				San Diego, Calif. <sup>1</sup> (19 m.)				Sault Ste. Marie, Mich. (221 m.)				Seattle, Wash. <sup>1</sup> (27 m.)				Spokane, Wash. (598 m.)			
	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity
Surface.....	31	996	21.9	90	30	1,011	17.8	79	31	990	6.8	88	31	1,015	11.6	88	31	947	7.4	83
500.....	31	960	21.1	85	30	958	16.6	71	31	957	6.7	83	31	959	10.1	90	31	963	16.1	62
1,000.....	31	906	19.1	79	30	901	14.8	63	31	900	4.5	80	31	903	7.7	88	31	908	13.4	62
1,500.....	31	855	17.0	79	30	849	12.4	54	31	847	2.6	74	31	850	5.0	85	31	849	5.9	66
2,000.....	31	806	14.4	80	30	800	10.0	46	31	798	1.7	66	31	799	2.6	79	31	798	3.5	62
2,500.....	31	759	12.0	74	29	753	8.1	42	31	748	0.1	59	31	751	0.1	74	31	750	0.7	62
3,000.....	31	716	9.8	67	29	708	5.6	39	31	702	-2.1	55	31	705	-2.6	69	31	705	-2.2	61
4,000.....	31	634	4.8	58	28	626	0.0	36	29	619	-7.0	54	31	621	-7.8	54	31	621	-8.1	56
5,000.....	31	560	-0.8	53	28	552	-6.4	40	26	544	-12.4	51	31	545	-14.1	52	31	545	-14.1	49
6,000.....	31	494	-6.8	48	27	486	-12.8	37	26	476	-18.7	49	31	477	-20.8	55	31	477	-20.9	44
7,000.....	29	434	-13.1	45	27	425	-19.8	39	25	416	-25.7	49	29	416	-27.7	54	30	416	-28.4	43
8,000.....	29	379	-19.8	44	24	371	-26.5	---	24	361	-32.7	49	29	361	-34.6	49	30	361	-36.0	41
9,000.....	29	331	-26.4	42	23	322	-33.0	---	23	313	-39.9	47	29	312	-41.7	---	30	312	-43.3	---
10,000.....	28	288	-33.8	41	23	278	-39.7	---	23	270	-47.1	---	29	269	-48.5	---	28	268	-49.3	---
11,000.....	27	249	-41.2	---	21	240	-45.5	---	22	232	-52.5	---	27	231	-53.5	---	27	230	-53.6	---
12,000.....	27	214	-48.7	---	19	206	-51.3	---	21	199	-55.8	---	27	198	-56.4	---	27	197	-55.7	---
13,000.....	27	184	-55.9	---	16	177	-56.0	---	20	170	-57.7	---	24	169	-58.2	---	27	168	-56.7	---
14,000.....	27	157	-62.2	---	12	151	-59.7	---	18	145	-58.9	---	22	144	-58.9	---	25	144	-57.5	---
15,000.....	27	133	-67.6	---	10	128	-63.1	---	15	123	-59.5	---	21	122	-59.1	---	24	122	-58.4	---
16,000.....	27	112	-71.1	---	7	109	-66.5	---	15	105	-59.4	---	19	104	-59.2	---	20	104	-58.2	---
17,000.....	24	95	-71.8	---	---	---	---	---	9	89	-58.4	---	14	88	-58.9	---	13	89	-57.9	---
18,000.....	17	80	-69.1	---	---	---	---	---	6	76	-58.0	---	10	74	-58.9	---	8	76	-57.0	---
19,000.....	8	68	-64.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

  

Altitude (meters) m. s. l.	Stations with elevations in meters above sea level																			
	Anchorage, Alaska (42 m.)				Atlantic Station No. 1 <sup>1</sup> (3 m.)				Atlantic Station No. 2 <sup>1</sup> (3 m.)				Bethel, Alaska (7 m.)				Coco Solo, C. Z. <sup>1</sup> (15 m.)			
	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity
Surface.....	31	968	2.2	66	28	1,017	20.4	70	27	1,017	18.3	78	31	1,003	1.6	80	19	1,012	26.4	92
500.....	31	943	1.3	62	28	960	16.2	74	27	960	14.0	83	31	944	0.2	79	19	958	24.9	79
1,000.....	31	886	-0.6	60	28	905	12.4	80	27	904	10.8	83	31	887	-2.3	79	19	904	22.2	78
1,500.....	31	831	-3.3	63	28	852	8.5	80	27	852	9.2	74	31	832	-4.3	72	19	854	19.4	70
2,000.....	31	780	-6.3	63	28	802	7.6	73	27	802	8.0	65	31	781	-6.8	66	19	804	16.7	66
2,500.....	31	732	-8.9	67	27	755	6.5	63	27	754	6.3	66	31	732	-9.6	62	19	758	13.5	64
3,000.....	30	686	-11.6	67	27	710	4.6	55	27	710	4.0	50	31	686	-12.5	63	19	714	10.7	60
4,000.....	30	601	-17.4	63	27	628	-6.2	40	27	627	-1.5	42	31	601	-18.3	62	19	635	4.1	58
5,000.....	29	525	-23.9	60	25	553	-5.4	33	26	552	-7.4	39	30	525	-24.3	58	---	---	---	---
6,000.....	29	457	-30.8	59	25	486	-11.3	35	26	485	-14.0	41	29	457	-30.9	56	---	---	---	---
7,000.....	28	396	-37.6	59	24	426	-17.0	35	25	425	-20.6	43	29	396	-37.6	55	---	---	---	---
8,000.....	28	342	-44.2	---	21	372	-24.9	35	25	370	-27.3	43	29	342	-44.0	---	---	---	---	---
9,000.....	27	294	-49.5	---	21	323	-31.9	34	25	321	-34.5	42	27	294	-49.1	---	---	---	---	---
10,000.....	27	252	-50.7	---	19	280	-39.1	---	24	278	-42.0	---	27	252	-51.5	---	---	---	---	---
11,000.....	27	217	-50.0	---	18	242	-46.2	---	24	240	-49.3	---	26	217	-50.8	---	---	---	---	---
12,000.....	25	186	-48.2	---	18	207	-52.4	---	23	205	-55.8	---	26	186	-49.1	---	---	---	---	---
13,000.....	23	160	-48.2	---	18	177	-57.9	---	22	175	-60.6	---	23	159	-47.8	---	---	---	---	---
14,000.....	22	137	-48.0	---	16	151	-60.1	---	20	149	-64.2	---	23	137	-47.8	---	---	---	---	---
15,000.....	20	118	-48.2	---	16	128	-62.1	---	17	126	-66.2	---	19	118	-48.0	---	---	---	---	---
16,000.....	15	102	-48.6	---	15	109	-64.2	---	17	107	-66.5	---	15	102	-48.2	---	---	---	---	---
17,000.....	7	87	-48.9	---	13	92	-64.6	---	15	91	-65.8	---	12	87	-48.4	---	---	---	---	---
18,000.....	---	---	---	---	13	78	-63.4	---	13	77	-63.9	---	5	75	-48.9	---	---	---	---	---
19,000.....	---	---	---	---	11	66	-61.6	---	9	65	-61.4	---	---	---	---	---	---	---	---	---
20,000.....	---	---	---	---	7	56	-59.2	---	6	55	-59.3	---	---	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 1.—Mean free-air barometric pressure in millibars, temperature in degrees centigrade, and relative humidities in percent, obtained by airplanes and radiosondes during October 1941—Continued

Altitude (meters) m. s. l.	Station's with elevations in meters above sea level															
	Juneau, Alaska (49 m.)				Ketchikan, Alaska (26 m.)				Nome, Alaska (14 m.)				St. Thomas, V. I. <sup>1</sup> (8 m.)			
	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity
Surface	31	1001	6.7	84	27	1008	8.8	88	30	1002	1.4	78	31	1015	27.2	77
500	31	947	4.5	82	27	952	6.4	88	30	943	-1.9	81	31	960	23.7	93
1,000	29	891	1.4	83	27	895	3.3	88	29	886	-4.5	80	31	906	20.8	78
1,500	27	837	-1.1	83	27	842	0.8	88	29	831	-7.0	76	31	855	17.9	75
2,000	26	786	-3.9	83	26	791	-1.9	86	28	779	-9.5	73	31	806	15.6	71
2,500	26	737	-6.8	81	26	742	-4.5	80	28	730	-12.3	71	31	760	13.4	60
3,000	22	691	-9.7	79	26	696	-7.5	76	29	683	-15.0	70	31	716	11.4	49
4,000	22	606	-15.7	76	23	612	-13.7	72	28	597	-20.9	66	31	635	6.0	36
5,000	21	530	-22.4	72	21	536	-19.9	70	26	521	-26.8	59				
6,000	20	462	-28.8	65	20	467	-26.7	68	26	453	-33.4	56				
7,000	20	401	-35.6	63	19	406	-33.3	66	26	392	-39.7	55				
8,000	18	346	-42.2		18	351	-40.1		24	338	-45.5					
9,000	17	298	-47.6		15	303	-45.8		22	291	-49.6					
10,000	14	256	-48.4		15	260	-48.2		22	250	-50.6					
11,000	14	220	-47.8		14	224	-50.0		20	214	-49.4					
12,000	14	189	-47.4		14	192	-51.1		20	184	-48.4					
13,000	14	162	-47.9		14	164	-51.6		18	158	-47.1					
14,000	13	139	-48.0		13	140	-52.3		17	136	-46.7					
15,000	11	120	-48.1		10	120	-52.6		17	117	-46.5					
16,000	9	102	-48.3		7	103	-52.6		14	100	-46.5					
17,000	5	88	-48.9						8	86	-46.8					
18,000									7	74	-47.0					
19,000																
20,000																
21,000																
22,000																

<sup>1</sup> U. S. Navy.<sup>2</sup> Airplane observations.<sup>3</sup> Observations made on Coast Guard vessels in or near the 5° square.

Lat. 35.00' N. to 40.00' N.

Long. 55.00' W. to 60.00' W.

<sup>4</sup> Observations made on Coast Guard vessels in or near the 5° square.

Lat. 35.00' N. to 40.00' N.

Long. 45.00' W. to 50.00' W.

NOTE.—All observations taken at 11 p. m. 75th meridian time, except at Lakehurst, N. J., where they are taken near 5 a. m., E. S. T., at Norfolk, Va., where they are taken at about 6 a. m., and at Pearl Harbor, T. H., St. Thomas, V. I., and Coco Solo, C. Z., at about 7 a. m.

None of the means included in this table are based on less than 15 surface or 5 standard level observations.

Number of observations refers to pressure only, as temperature and humidity data are missing for some observations at certain levels; also, the humidity data are not used in daily observations when the temperature is below -40° C.

## Late Reports for September and August

Altitude (meters) m. s. l.	Stations with elevations in meters above sea level															
	SEPTEMBER 1941								AUGUST 1941							
	St. Thomas, V. I. 1-2 (8 m.)				Barrow, Alaska (0 m.)				Joliet, Ill. (178 m.)				St. Thomas, V. I. 1-2 (8 m.)			
	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity
Surface	26	1,014	27.8	74	31	1,016	3.5	92	29	995	18.5	85	28	1,016	27.8	74
500	26	958	24.3	92	31	957	5.1	83	29	958	20.9	69	28	961	24.3	91
1,000	26	905	21.6	76	31	900	4.6	73	29	904	18.4	67	28	907	21.3	79
1,500	26	854	18.7	71	31	846	3.0	68	29	853	15.2	72	28	856	18.6	72
2,000	26	805	16.5	63	31	795	1.0	65	29	804	12.3	72	28	808	16.4	68
2,500	26	759	14.2	53	31	747	-1.2	63	29	757	9.6	67	28	762	14.1	56
3,000	26	716	11.8	48	31	701	-3.4	61	29	712	6.9	67	28	718	11.8	56
4,000	26	635	8.4	40	31	617	-9.5	60	29	630	1.0	63	28	637	8.3	47
5,000					31	542	-15.6	57	26	556	-4.4	56				
6,000					31	474	-22.2	55	25	489	-10.1	49				
7,000					31	413	-29.1	53	24	429	-16.5	45				
8,000					31	358	-36.6	53	24	374	-23.8	42				
9,000					30	309	-44.0		24	326	-31.2	38				
10,000					29	266	-50.5		23	282	-38.7					
11,000					29	228	-51.9		19	244	-46.0					
12,000					28	196	-49.7		19	204	-52.9					
13,000					27	168	-48.0		17	179	-58.4					
14,000					25	144	-47.2		17	152	-62.5					
15,000					25	124	-46.9		16	129	-64.7					
16,000					24	106	-46.7		15	110	-64.7					
17,000					22	91	-46.6		11	93	-63.1					
18,000					19	78	-46.2		6	79	-59.9					
19,000					13	67	-46.0									
20,000					8	58	-45.8									

TABLE 2.—Free-air resultant winds based on pilot balloon observations made near 5 p. m. (75th meridian time) during October 1941. Directions given in degrees from North (N=360°, E=90°, S=180°, W=270°)—Velocities in meters per second

Altitude (meters) m. s. l.	Abilene, Tex. (537 m.)			Albuquerque, N. Mex. (1,630 m.)			Atlanta, Ga. (299 m.)			Billings, Mont. (1,095 m.)			Bismarck, N. Dak. (512 m.)			Boise, Idaho (866 m.)			Brownsville, Tex. (7 m.)			Buffalo, N. Y. (220 m.)			Burlington, Vt. (132 m.)			Charleston, S. C. (17 m.)			Chicago, Ill. (192 m.)			Cincinnati, Ohio (152 m.)			Denver, Colo. (1,627 m.)		
	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity			
Surface.....	29	184	2.4	30	198	3.1	30	41	0.5	29	228	1.8	29	290	2.2	30	321	3.2	31	130	4.2	30	264	3.5	29	226	1.4	31	129	1.4	29	251	1.2	30	243	0.9	29	31	1.2
500	29	186	5.0	30	199	3.7	30	89	0.7	29	228	1.8	29	290	2.2	30	321	3.2	31	136	5.2	30	259	5.6	29	246	4.8	31	125	2.2	29	221	4.0	30	243	3.4	29	31	1.2
1,000	29	186	5.0	30	199	3.7	30	89	0.7	29	228	1.8	29	290	2.2	30	321	3.2	31	136	5.2	30	259	5.6	29	246	4.8	31	125	2.2	29	221	4.0	30	243	3.4	29	31	1.2
1,500	28	199	5.7	30	207	4.0	27	172	0.8	29	251	3.3	28	283	4.7	30	315	2.6	28	156	5.6	28	261	7.8	24	272	7.4	31	131	1.5	27	241	6.4	28	248	5.2	29	31	1.2
2,000	28	206	7.1	30	207	4.0	27	172	0.8	29	251	3.3	28	283	4.7	30	315	2.6	28	156	5.6	28	261	7.8	24	272	7.4	31	131	1.5	27	241	6.4	28	248	5.2	29	31	1.2
2,500	26	216	7.8	30	207	4.0	22	304	3.2	28	272	5.2	22	281	8.2	28	284	3.2	23	161	4.1	17	267	9.7	20	282	9.8	29	212	1.5	24	259	8.4	25	255	7.6	29	31	1.2
3,000	22	230	8.9	30	228	5.1	21	294	3.8	28	286	5.5	21	282	10.5	25	276	2.6	19	163	4.1	12	276	14.9	13	289	13.0	27	252	2.3	23	275	10.7	22	267	11.3	28	31	1.2
4,000	20	241	11.1	24	256	9.7	18	287	5.8	24	284	6.8	20	281	13.3	24	266	1.8	18	158	4.5	10	282	15.4	10	282	15.4	26	276	6.6	18	284	17.0	17	284	15.3	22	270	7.1
5,000	14	249	16.3	23	254	13.3	17	286	8.4	22	281	7.7	20	282	16.2	20	298	2.6	17	174	4.1	10	282	15.4	10	282	15.4	26	276	6.6	18	284	17.0	17	284	15.3	22	270	7.1
6,000	13	253	17.6	19	256	14.0	16	281	9.6	21	275	9.3	19	278	19.3	19	295	4.7	10	182	5.8	10	282	15.4	10	282	15.4	26	276	6.6	18	284	17.0	17	284	15.3	22	270	7.1
8,000	11	245	22.5	15	267	20.7	15	279	11.3	14	310	7.6	13	276	21.5	12	300	8.9	10	182	5.8	10	282	15.4	10	282	15.4	26	276	6.6	18	284	17.0	17	284	15.3	22	270	7.1
10,000	11	245	22.5	15	267	20.7	15	279	11.3	14	310	7.6	13	276	21.5	12	300	8.9	10	182	5.8	10	282	15.4	10	282	15.4	26	276	6.6	18	284	17.0	17	284	15.3	22	270	7.1
12,000	11	245	22.5	15	267	20.7	15	279	11.3	14	310	7.6	13	276	21.5	12	300	8.9	10	182	5.8	10	282	15.4	10	282	15.4	26	276	6.6	18	284	17.0	17	284	15.3	22	270	7.1
14,000	11	245	22.5	15	267	20.7	15	279	11.3	14	310	7.6	13	276	21.5	12	300	8.9	10	182	5.8	10	282	15.4	10	282	15.4	26	276	6.6	18	284	17.0	17	284	15.3	22	270	7.1

Altitude (meters) m. s. l.	El Paso, Tex. (1,196 m.)			Ely, Nev. (1,910 m.)			Grand Junction, Colo. (1,413 m.)			Greensboro, N. C. (271 m.)			Havre, Mont. (767 m.)			Jacksonville, Fla. (14 m.)			Las Vegas, Nev. (570 m.)			Little Rock, Ark. (79 m.)			Medford, Oreg. (410 m.)			Miami, Fla. (10 m.)			Minneapolis, Minn. (265 m.)			Mobile, Ala. (8 m.)			Nashville, Tenn. (194 m.)		
	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity			
Surface.....	30	211	1.6	31	269	0.5	30	263	0.8	31	253	0.8	30	258	2.9	30	91	4.3	30	104	1.1	27	165	1.9	29	326	0.9	31	95	4.0	28	239	0.9	31	115	1.1	31	213	1.2
500	30	211	1.6	31	269	0.5	30	263	0.8	31	253	0.8	30	258	2.9	30	91	4.3	30	104	1.1	27	165	1.9	29	326	0.9	31	95	4.0	28	239	0.9	31	115	1.1	31	213	1.2
1,000	29	217	2.9	31	283	0.6	30	262	1.1	30	277	6.7	29	265	7.3	24	159	1.3	30	119	1.5	25	207	3.3	29	344	1.2	31	89	4.3	24	234	2.9	29	126	1.6	31	216	4.5
1,500	30	224	3.8	31	283	0.6	30	262	1.1	30	277	6.7	29	265	7.3	24	159	1.3	30	119	1.5	25	207	3.3	29	344	1.2	31	89	4.3	24	234	2.9	29	126	1.6	31	216	4.5
2,000	30	229	4.6	31	283	0.6	30	262	1.1	30	277	6.7	29	265	7.3	24	159	1.3	30	119	1.5	25	207	3.3	29	344	1.2	31	89	4.3	24	234	2.9	29	126	1.6	31	216	4.5
2,500	30	229	4.6	31	283	0.6	30	262	1.1	30	277	6.7	29	265	7.3	24	159	1.3	30	119	1.5	25	207	3.3	29	344	1.2	31	89	4.3	24	234	2.9	29	126	1.6	31	216	4.5
3,000	29	242	7.4	31	283	0.6	28	213	4.0	28	283	8.9	26	274	8.1	23	284	1.6	25	243	1.4	18	240	7.7	24	298	0.4	24	114	3.1	16	283	13.6	15	282	1.4	20	269	7.2
4,000	25	250	10.6	25	268	3.0	24	201	4.9	26	282	10.9	26	273	9.6	22	298	2.7	23	261	5.0	14	260	9.9	24	327	3.3	24	108	2.7	16	289	16.3	14	245	2.6	16	278	9.5
5,000	21	249	13.0	19	251	6.4	20	235	5.2	23	284	12.4	19	272	7.4	21	301	3.1	19	268	8.1	11	256	10.8	23	332	4.5	25	83	2.3	16	284	19.7	11	283	4.7	13	275	12.6
6,000	19	253	15.8	17	267	7.0	17	261	5.9	21	285	16.9	15	293	7.1	20	296	3.6	19	268	8.1	11	256	10.8	23	332	4.5	25	83	2.3	16	284	19.7	11	283	4.7	13	275	12.6
8,000	12	250	20.0	13	274	10.6	12	279	14.0	12	295	22.7	11	289	9.2	17	269	18.1	17	269	18.1	11	256	10.8	23	332	4.5	25	83	2.3	16	284	19.7	11	283	4.7	13	275	12.6
10,000	12	250	20.0	13	274	10.6	12	279	14.0	12	295	22.7	11	289	9.2	17	269	18.1	17	269	18.1	11	256	10.8	23	332	4.5	25	83	2.3	16	284	19.7	11	283	4.7	13	275	12.6
12,000	12	250	20.0	13	274	10.6	12	279	14.0	12	295	22.7	11	289	9.2	17	269	18.1	17	269	18.1	11	256	10.8	23	332	4.5	25	83	2.3	16	284	19.7	11	283	4.7	13	275	12.6
14,000	12	250	20.0	13	274	10.6	12	279	14.0	12	295	22.7	11	289	9.2	17	269	18.1	17	269	18.1	11	256	10.8	23	332	4.5	25	83	2.3	16	284	19.7	11	283	4.7	13	275	12.6

Altitude (meters) m. s. l.	New York, N. Y. (15 m.)			Oakland, Calif. (8 m.)			Oklahoma, City, Okla. (402 m.)			Omaha, Nebr. (306 m.)			Phoenix, Ariz. (338 m.)			Rapid City, S. Dak. (982 m.)			St. Louis, Mo. (181 m.)			San Antonio, Tex. (180 m.)			San Diego, Calif. (15 m.)			Sault St. Marie, Mich. (230 m.)			Seattle, Wash. (12 m.)			Spokane, Wash. (603 m.)			Washington, D. C. (24 m.)		
	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity			
Surface.....	28	275	3.4	31	258	2.9	25	198	2.2	29	191	1.5	31	237	0.9	28	356	1.8	27	197	1.0	30	120	2.2	31	250	2.9	24	292	3.2	30	199	2.1	28	210	1.5	31	260	2.6
500	28	267	5.1	31	325	1.5	25	183	2.7	28	183	2.4	31	221	1.2	28	356	1.8	27	211	2.3	30	130	3.2	31	247	3.0	24	288	3.9	30	208	3.5	28	212				



TABLE 3.—Maximum free air wind velocities, (m. p. s.), for different sections of the United States based on pilot-balloon observations during October 1941

Section	Surface to 2,500 meters (m. s. l.)					Between 2,500 and 5,000 meters (m. s. l.)					Above 5,000 meters (m. s. l.)				
	Maximum velocity	Direction	Altitude (m.) m. s. l.	Date	Station	Maximum velocity	Direction	Altitude (m.) m. s. l.	Date	Station	Maximum velocity	Direction	Altitude (m.) m. s. l.	Date	Station
Northeast <sup>1</sup>	42.6	WSW	830	5	Buffalo, N. Y.	50.4	NW	3,130	23	Kylertown, Pa.	70.4	WNW	8,820	17	Albany, N. Y.
East-Central <sup>2</sup>	36.2	SW	1,740	8	Portland, Maine.	55.4	NW	4,400	10	Huntington, W. Va.	70.0	W	11,570	28	Greensboro, N. C.
South-Central <sup>3</sup>	26.3	SW	2,420	27	Huntington, W. Va.	28.2	NW	3,940	10	Spartanburg, S. C.	55.2	W	20,500	20	Miami, Fla.
North-Central <sup>4</sup>	39.4	W	1,650	27	Atlanta, Ga.	63.2	WSW	3,170	7	Muskegon, Mich.	74.5	WNW	11,560	10	Minneapolis, Minn.
Central <sup>5</sup>	36.6	WSW	2,100	7	Green Bay, Wis.	45.0	SSW	4,970	4	Wichita, Kans.	73.0	WSW	9,170	9	Omaha, Nebr.
South-Central <sup>6</sup>	34.0	SW	2,500	5	Springfield, Ill.	38.4	SW	3,370	26	Oklahoma City, Okla.	64.0	SW	13,255	31	San Antonio, Tex.
Northwest <sup>7</sup>	36.0	WSW	1,900	3	Little Rock, Ark.	37.6	WSW	3,770	10	Butte, Mont.	77.0	N	10,220	2	Great Falls, Mont.
West-Central <sup>8</sup>	33.4	NNW	430	2	Billings, Mont.	51.6	NNE	4,650	2	Reno, Nev.	76.0	WNW	11,450	25	Reno, Nev.
Southwest <sup>9</sup>	29.9	SW	2,460	5	Sacramento, Calif.	40.0	SW	3,200	13	Winslow, Ariz.	71.7	SW	12,320	8	Las Vegas, Nev.
					Las Vegas, Nev.		N	5,000	2	Bakersfield, Calif.					

<sup>1</sup> Maine, Vermont, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania and Northern Ohio.

<sup>2</sup> Delaware, Maryland, Virginia, West Virginia, Southern Ohio, Kentucky, Eastern Tennessee and North Carolina.

<sup>3</sup> South Carolina, Georgia, Florida, and Alabama.

<sup>4</sup> Michigan, Wisconsin, Minnesota, North Dakota, and South Dakota.

<sup>5</sup> Indiana, Illinois, Iowa, Nebraska, Kansas, and Missouri.

<sup>6</sup> Mississippi, Arkansas, Louisiana, Oklahoma, Texas (except El Paso), and Western Tennessee.

<sup>7</sup> Montana, Idaho, Washington, and Oregon.

<sup>8</sup> Wyoming, Colorado, Utah, Northern Nevada, and Northern California.

<sup>9</sup> Southern California, Southern Nevada, Arizona, New Mexico, and extreme West Texas.

## WEATHER ON THE NORTH ATLANTIC OCEAN

By H. C. HUNTER

**Atmospheric pressure.**—The pressure during October 1941, averaged above normal over large portions of the North Atlantic, especially near the coasts of the South Atlantic States, Cuba, and the Bahamas. On the other hand it averaged below normal near the Maritime Provinces, Newfoundland, and Labrador.

The extremes of pressure noted in vessel reports at hand were 1,036.2 and 991.5 millibars (30.60 and 29.28 inches). The high reading was noted during the forenoon of the 30th, about 50 miles from Montauk Point, in a south-southwest direction. Table 1 shows that the pressure was slightly higher at Halifax, Nova Scotia, that day. The low mark was noted near southeastern Newfoundland during the early afternoon of the 20th. During other portions of the month both Belle Isle and Halifax recorded lower pressures.

In low latitudes readings slightly below 1,000 millibars (29.53 inches) were noted by two vessels near 29° N., 75° W., on the 10th, when within the area affected by a storm of tropical origin. However, this storm, when crossing the Bahama Islands several days earlier, as indicated in an article on page 303 of this REVIEW, resulted in a pressure of 964.4 millibars (28.48 inches) on Cat Island.

TABLE 1.—Averages, departures, and extremes of atmospheric pressure (sea level) at selected stations for the North Atlantic Ocean and its shores, October 1941

Station	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	Millibars	Millibars	Millibars		Millibars	
Horta, Azores	1,020.0	+0.4	1,031	13	1,009	7
Belle Isle, Newfoundland	1,007.9	-3.3	1,029	30	986	12
Halifax, Nova Scotia	1,014.8	-2.5	1,038	30	989	11
Nantucket	1,018.0	+4	1,036	30	1,000	10
Hatteras	1,020.3	+2.3	1,030	29	1,009	10
Turks Island <sup>1</sup>	1,016.0	+1.8	1,019	18	1,012	16
Key West	1,016.3	+2.4	1,022	14	1,011	6
New Orleans	1,017.3	+4	1,024	4	1,010	2

<sup>1</sup> For 27 days.

NOTE.—All data based on available observations, departures compiled from best available normals related to times of observation, except Hatteras, Key West, Nantucket, and New Orleans, which are 24-hour corrected means.

**Cyclones and gales.**—The vessel reports available indicate a comparatively quiet October. In middle latitudes two strong gales and several fresh gales occurred. The period centering on the 20th appears to have been the most eventful, and from the 8th to 11th likewise was somewhat unquiet.

The opening week and the period from 22d to 26th seem to have been remarkably undisturbed from the 30th parallel northward.

**Tropical disturbances.**—In another portion of this issue an account is presented of two disturbances of tropical origin. The earlier of these cyclones was noted to northward of the Virgin Islands on the 3d; it moved westward across the Bahamas and extreme southern Florida, turned northward over the Gulf and traversed parts of western Florida, southern Georgia and South Carolina, then moved southeastward over the Atlantic to near latitude 30°, thence continued mainly eastward till beyond the field of observation.

This storm was of comparatively small diameter during much of its course, and was for awhile remarkably intense, especially over the Bahamas. A few lives are reported lost in the Bahamas and some in northwestern Florida. No vessel report that relates to this storm indicates a higher wind than a strong gale (force 9).

The later Low was of short path and little moment. Its track was approximately the middle portion of the track of the earlier storm, and the time was about 13 days later. The greatest wind force noted in vessel reports as a result of this disturbance was a moderate gale (force 7).

**Line squalls.**—About 150 miles to eastward of the extreme southeastern coast of Maryland line squalls were noted from a vessel which furnishes this report:

October 1, 9:30 p. m., 75th meridian time (equivalent to October 2, 2:30 a. m., Greenwich mean time), in latitude 38°04' N., longitude 73°00' W., barometer 30.16 inches (1021.3 millibars), having risen 0.03 inch during 1½ hours preceding, temperature of air 72°, of water 70°; three line squalls, moving southeastward, ranging from about 15 to 20 miles in length, passed at intervals of about 5 to 8 minutes. The clouds appeared in a very compact mass and in an almost straight line. During this time the wind shifted from southwest, Beaufort force 3, to northwest, same force; within the succeeding 3½ hours the wind turned partly back, becoming west, force 2. Other clouds at the time of the squalls were alto-cumulus, about two-tenths of sky being covered, apart from the line squall masses which covered a third of the overhead as they passed. Sea small southwest. Ship's course north-northeast, speed 14 knots.